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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/919,045

Applicant(s)

NAGARAJAN ET AL.

Examiner

BRENDA PHAM

Art Unit

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTON

1. Claims 1-14 are pending.

Response to Arguments

2. Applicant's arguments filed 03/30/2009 have been fully considered but they are not persuasive. Applicant argued in Remark, page 7 that "the processes set forth in method claims 1-7 are so complex that the steps involved, practically speaking, require a device with far more computational capability than the human mind to complete in any reasonable time period. Further, claims 1-7 are clearly patentable in view of the transformation prong of Bilski. For example, in claim 1 a predetermined sequence, comprising ports and corresponding wavelengths, is transformed in order to assign a link resource. The ports and wavelengths are clearly data or electronic signals that represent physical and tangible articles, objects or substances of an optical network or node. Yet further, the assignment step is not insignificant post-solution activity. Rather, this step is central to the purpose of claim 1 (as those terms are used in Bilski).

Examiner respectfully disagrees. As set forth in the Office Action, the instant claims are neither positively tied to a particular machine or apparatus that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. In this case, the method claims 1-7 including steps of receiving a request and assigning a link resource is broad enough that the claim could be completely performed mentally, verbally or without a machine nor is any transformation apparent. Applicant argued that "in claim 1 a predetermined sequence,

comprising ports and corresponding wavelengths, is transformed in order to assign a link resource." The Examiner respectfully disagrees because the step assigning a link resource at least one predefined sequence does not qualify as transformation of underlying subject matter. The transformed articles must be "physical objects or substances (or) representative of physical objects or substances." The method claims 1-7 were not seem as transforming an article or substances. Therefore the 35 USC § 101 rejection stands.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-7 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing, see page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine or apparatus that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process. In this case, the method claims 1-7 including steps of receiving a request and assigning a link resource is broad enough that the claim could

be completely performed mentally, verbally or without a machine nor is any transformation apparent.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2, 6, 8-9 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Beshai et al. (US 6,744,775 B1).

Regarding claims 1, 6, 8 and 12 Beshai et al. discloses an apparatus and method for use in a node of an optical network (**"A link may be a physical transmission medium between two nodes, for example an optical fiber, or selected wavelengths in an optical fiber."** Col. 1, lines 19-23), the method comprising the steps of:

receiving a connection request; and

assigning a link resource selected from link resources that have been released for connecting to a neighboring node by using at least one predefined sequence, that comprises ports and corresponding wavelengths within a node (**FIG. 5 illustrates an overall routing table for the network of FIG. 1, "For example, the route set for**

node pair (3, 0) includes 3-4-5-0 and 3-2-1-0." col. 6, lines 24-30), "A link may be a physical transmission medium between two nodes, for example an optical fiber, or selected wavelengths in an optical fiber. Links may have different capacities and different associated costs. As well, the number of links emanating from each node may vary from one node to another. The capacity of a link may be changed dynamically by adding channels, for instance by assigning new wavelengths in an optical network" col. 1, lines 19-30);

wherein the at least one predefined sequence resulted from a negotiation with the neighboring node prior to receipt of the request (**FIG. 19 illustrates the at least one predefined sequence resulted from a negotiation with the neighboring node prior to receipt of the request**)

Regarding claim 2, 9, Beshai et al. further discloses wherein the assigning step includes accessing a table for selecting the link resource for assignment to the connection request, the table comprising link resources arranged in accordance with the at least one predefined sequence wherein the link resources comprises ports of the node associated with the link (**FIG. 5 illustrates a table for selecting the link resource for assignment to the connection request, the table comprising link resources arranged in accordance with the at least one predefined sequence wherein the link resources comprises ports of the node associated with the link. "For example, the route set for node pair (3, 0) includes 3-4-5-0 and 3-2-1-0." col. 6, lines 24-30)**

Regarding claims 3, 7, 10 and 14 Beshai et al. teaches an optical network and a predefined sequence comprises ports and corresponding wavelength within a node ("**A link may be a physical transmission medium between two nodes, for example an optical fiber, or selected wavelengths in an optical fiber. Links may have different capacities and different associated costs. As well, the number of links emanating from each node may vary from one node to another. The capacity of a link may be changed dynamically by adding channels, for instance by defined assigning new wavelengths in an optical network.**")

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-2, 6, 8-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Callon (US 6,256,295 B1) in view of Beshai et al. (US 6,744,775 B1).

Regarding claims 1, 6, 8 and 12 Callon discloses an apparatus and method for use in a node of a network (see NODE of FIG. 3), the method comprising the steps of:

receiving a connection request ("**step 110 determines whether additional non-overlapping paths are needed. This determination may be based on a specific**")

number of non-overlapping paths requested by the user or network administrator.” Col. 6, lines 35-40); and

assigning a link resource selected from link resources that have been released for connecting to a neighboring node by using at least one predefined sequence (predetermined sequence is path 80 shows in Figure 4C), (“TENT database 75 and PATNS database 80 are used by the Dijkstra-based algorithms to determine such a path. Forwarding database 85 stores the calculated based path and allows routing engine 65 to perform a simple lookup to determine the path for forwarding a packet to the destination node.” Col. 4, lines 30-35) to avoid contention resulting from the request (Callon discloses methods and computation for determining multiple non-overlapping or minimally-overlapping paths to avoid contention resulting form the request, Col. 2, line 45-50);

wherein the at least one predefined sequence resulted from a negotiation with the neighboring node prior to receipt of the request (“Each node of network 10 generates its own link state packet that includes information regarding its neighbor nodes including the identity of each neighbor node and the cost associated with reaching each neighbor node. When node 50 has received link state packets from every node of network 10, node 50 will have a complete map of the topology of the network stored in link state database 70. Routing engine 65 may use the information stored in link state database 70 to determine paths between node 50 and any other node of the network.” Col. 4, lines 19-29).

Callon does not teach the method for use in a node of an optical network and at least one predefined sequence comprises ports and corresponding wavelength within a node.

Beshai et al. in the same field of endeavor, teaches in a communication network comprising nodes and links between nodes, a controller node disseminates link state information. a nodal routing table exists at each node comprising routes between pairs of nodes. Beshai et al. further teaches an optical network and a predefined sequence comprises ports and corresponding wavelength within a node (**"A link may be a physical transmission medium between two nodes, for example an optical fiber, or selected wavelengths in an optical fiber. Links may have different capacities and different associated costs. As well, the number of links emanating from each node may vary from one node to another. The capacity of a link may be changed dynamically by adding channels, for instance by defined assigning new wavelengths in an optical network. The cost of a link may be defined according to several criteria including such qualities as reliability and delay."** Col. 1, lines 19-30).

It is well known in the art that when a large network deploys a new architecture, it is highly desirable to reuse the existing node sites and physical routes as much as possible due to the costs of land, equipment and construction. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to implement the method of Callon in an optical transport network, such as that taught by Beshai et al.

Regarding claim 2, 9, Callon further discloses wherein the assigning step includes accessing a table for selecting the link resource for assignment to the connection request (**see PATH table 80 of FIG. 4C**), the table comprising link resources arranged in accordance with the at least one predefined sequence (**PATH [A,B,G,H], see PATH 80 of FIG. 4C**), wherein the link resources comprises ports of the node associated with the link (**See Port 55 of FIG. 3**).

Regarding claims 3, 7, 10 and 13-14, Callon discloses method and apparatus for determining multiple minimally-overlapping paths between nodes in a network. The system determines a first path between the source node and the destination node.

Callon does not teach the method is implemented in an optical transport network.

It is well known in the art that when a large network deploys a new architecture, it is highly desirable to reuse the existing node sites and physical routes as much as possible due to the costs of land, equipment and construction. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to implement the method of Callon in an optical transport network.

9. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Callon (US 6,256,295 B1) in view of Beshai et al. (US 6,744,775 B1) further in view of Borchering (US 7,009,966 B2).

Regarding claims 4, and 11, Callon in view of Beshai et al disclose and render obvious all the claimed limitations recite in parent claim (claims 1, 3, 8, 9 and 10).

Callon in view of Beshai does not disclose wherein the resources are selected from the group consisting of wavelengths, SONET-based tributaries, SDH-based tributaries and PDH based tributaries.

Borchering discloses a method and apparatus for a data first optical network for bandwidth management a dynamic transport model relying on wavelength routing is used. a large number of sub-wavelength services exist and are provided using SONET/SDH and PDH. The services architecture is assumed to be client server treating information movement as a virtual resource."

Borchering teaches "Both voice and data network elements connect to a common SONET/SDH infrastructure. Above layer 1, voice and data use different switching element and technology. SONET/SDH is the choice for both long haul and local physical layer switching and transmission. The New converged public network may reduce the number of element distinct layers from the current 4 (physical media ADMs, SONET/SDH cross-connects ATM, IP) to two element distinct layers (IP and Optical). This may raise the convergence layer to IP. This is referred to as Packet over Wave (PoW).

For the above reasons, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement SONET/SDH/PDH, such as taught by Borchering, in Callon in view of Beshai.

10. Claims 4 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beshai et al. (US 6,744,775 B1) in view of Borchering (US 7,009,966 B2).

Regarding claims 4 and 11, Beshai does not disclose wherein the resources are selected from the group consisting of wavelengths, SONET-based tributaries, SDH-based tributaries and PDH based tributaries.

Borchering discloses a method and apparatus for a data first optical network for bandwidth management a dynamic transport model relying on wavelength routing is used. a large number of sub-wavelength services exist and are provided using SONET/SDH and PDH. The services architecture is assumed to be client server treating information movement as a virtual resource."

Borchering teaches "Both voice and data network elements connect to a common SONET/SDH infrastructure. Above layer 1, voice and data use different switching element and technology. SONET/SDH is the choice for both long haul and local physical layer switching and transmission. The New converged public network may reduce the number of element distinct layers from the current 4 (physical media ADMs, SONET/SDH cross-connects ATM, IP) to two element distinct layers (IP and Optical). This may raise the convergence layer to IP. This is referred to as Packet over Wave (PoW).

For the above reasons, it would have been obvious to those having ordinary skill in the art at the time of the invention was made to implement SONET/SDH/PDH, such as taught by Borchering, in Callon in view of Beshai.

11. The prior arts made of record and not relied upon is considered pertinent to applicant's disclosure.

Phelps et al (US 2002/0118636 A1) discloses mesh network protection using dynamic ring.

Spiegel et al (US 5,649,108) discloses combined progressive and source routing control for connection oriented communication networks.

Lu et al (US 2002/0191247 A1) discloses fast restoration in optical mesh network.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2416

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Pham whose telephone number is (571) 272-3135. The examiner can normally be reached on Monday-Friday from 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo, can be reached on (571) 272-3139.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

/Brenda Pham/

Primary Examiner, Art Unit 2416